IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

"Anti-accident System Using MT-CNN And KCF Algorithms"

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1.Abstract

The face, an important part of the body, conveys plenty of information. When a driver is in a country of fatigue, the facial expressions, e.G., the frequency of blinking and yawning, are distinct from the ones in the regular kingdom. In this paper, we advocate a system referred to as DriCare, which detects the drivers' fatigue status,along with yawning, blinking, and period of eye closure, the use of video images, without equipping . The face, an important a part of the body, conveys plenty of information. When a driving force is in a country of fatigue, the facial expressions, e.G., the frequency of blinking and yawning, are one-of-a-kind from the ones in the regular nation. In this paper, we propose a system referred to as DriCare, which detects the drivers' fatigue status,such as yawning, blinking, and length of eye closure, the usage of video images, without equipping their our bodies with devices. Owing to the shortcomings of previous algorithms, we introduce a new face-monitoring algorithm to improve the tracking accuracy. Further, we designed a brand new detection technique for facial regions primarily based on 68 key points. Then we use those facial regions to assess the drivers' nation. By combining the capabilities of the eyes and mouth, DriCare can alert the driving force using a fatigue warning. The experimental consequences confirmed hat DriCare achieved around 92% accuracy.

Keywords: *deep learning* ,opencv,.wav file, shape predictor

Introduction

Automotive population is increasing exponentially inside the country. The biggest trouble regarding the increased traffic is the increase in number of street accidents. Road accidents are surely a international threat in our country. The global status file on road safety published by means of the World Health Organization (WHO) identified the foremost reasons of street accidents are because of driving force errors and carelessness. Driver sleepiness, alcoholism and carelessness are the key gamers in coincidence scenario. The fatalities and associated fees due to avenue accidents are very serious issues To perceive the driving force is sound asleep or not. To keep away from foremost road coincidence. It offer the safety to internal passengers of the bus, van etc. Bus driving force is snoozing at riding the vehicle it can reasons the important accident to keep away from this we are identified the motive force is attempting to sleeping or not.

Motivation:

This office work would now not have been feasible without the guidance and the assist of several folks that in one-way or other contributed and prolonged their treasured assistance within the education and completion of this study. The writer is very thankful to all the researchers on this ever growing field who have contributed their time and knowledge. I would really like to express my deep sense of gratitude to Udesang K. Jaliya and Darshak G. Thakore for their precious steering, motivation and forgiving me such an possibility to discover new ideas. I respect all my friends whose direct and indirect contribution helped me a lot to accomplish this survey paintings and who made the length of my paintings more high-quality and fruitful. I would also like to thank all of the teaching and non-teaching team of workers for cooperating with me and providing valuable recommendation and assets which helped me inside the completion of this work. Last but no longer the least I would really like to thank my circle of relatives members, who taught me the price of tough paintings via their personal example. They supplied me enormous support at some stage in this paintings directly and indirectly.

RELATED WORK OR LITERATURE SURVEY

[1] Building a face expression recognizer and a face expression database for an intelligent tutoring system

Author: Ramon Zatarain-Cabada, Maria Lucia Barron-Estrada, Francisco Gonzalez-Hernandez, Hector Rodriguez-Rangel

Nowadays, no one can deny the relevance and the importance of artificial intelligence. We can find the use of artificial intelligence methods in subjects such as social networks, smart devices, games, industrial management control processes, and education

[2] Facial Expression Recognition by Calculating Euclidian Distance for Eigen Faces using pca.

Author: Divya Mangala B.S and Prajwala N.B

In this paper the proposed methodology is to recognize Facial expressions of human being by using Eigen Faces. [3] Facial Expression Recognition from a Partial Face Image by Using Displacement Vector

Author: Charoenpong Theekapun, Shogo Tokai, Hiroyuki Hase As facial expressions provide significant information such as affective stage, cognitive activity, temperament and personality, truthfulness, and psychopathology, there are the several researches studying on facial perception over the last three decades

PROPOSED APPROACH

Proposed System:

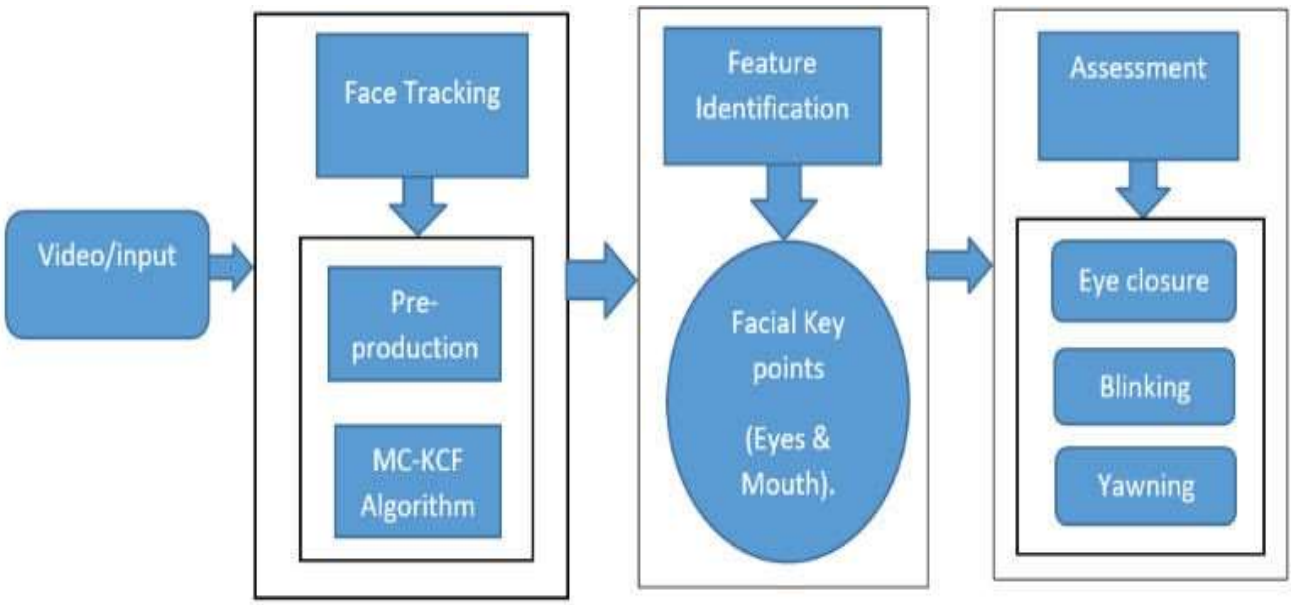


Fig.1 Advance System Architecture

Data Preprocessing:

- ✓ In existing machine there may be no computerizes machine to identified the present day driver slumbering expressions. So someday driver is making an attempt to sleep on duty so this is dangerous for the passengers on board bus. So we're trying to triumph over this trouble we are seize video streaming on- line of bus and discover the motive force expression and extract facial expression and decide the driver is napping or not. This system prevents occurrence of accident itself, by detecting the drivers state while driving and alerting the driver if fatigue state is detected
- ✓ This system is cheap and is made specially for public transportation as drivers of public transportation drive day and night. So the risk here is more.

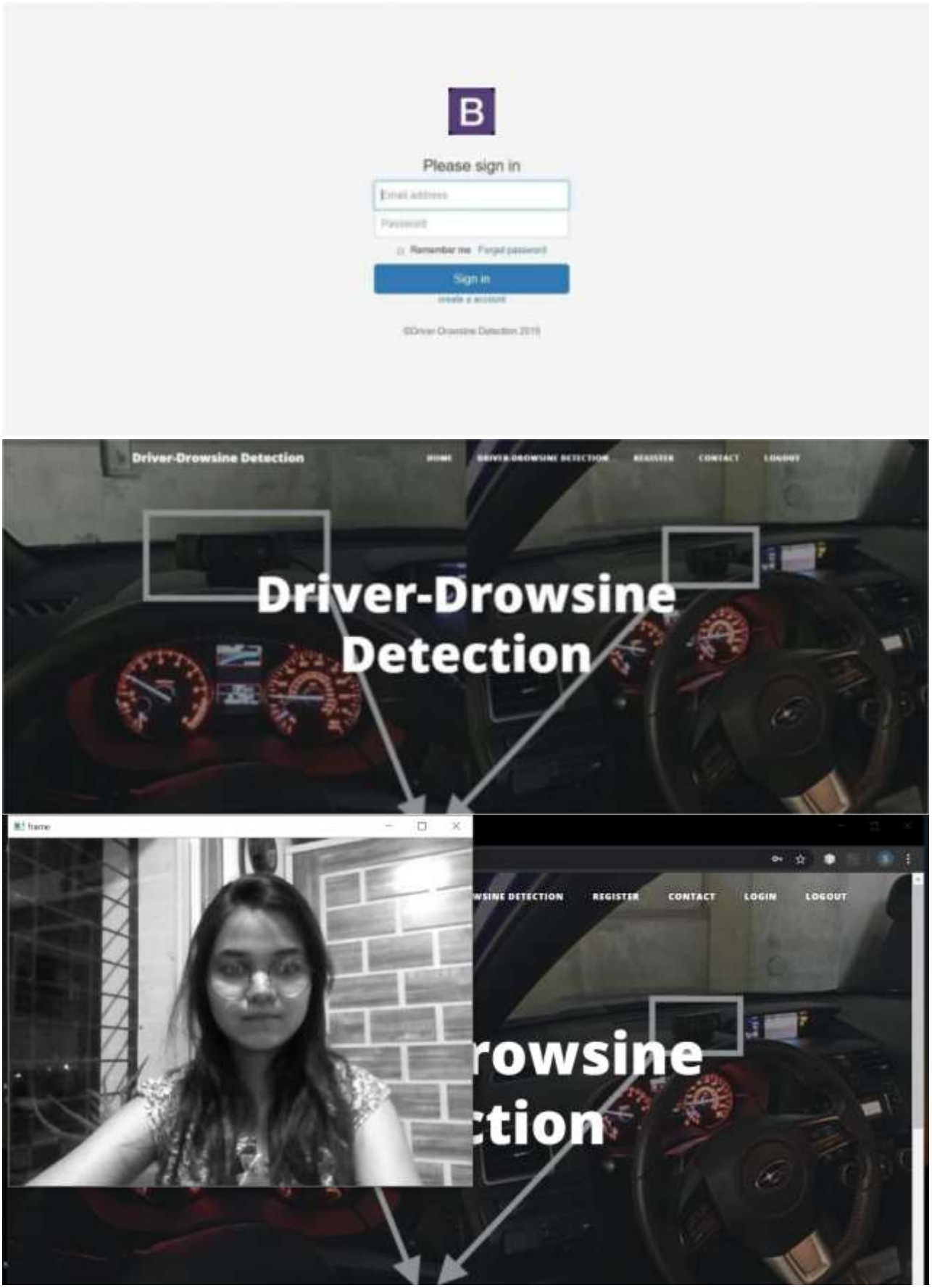
Stop Word Removal:

Stop words are common and high frequency words like “a”, “the”, “of”, “and”, “an”. Different methods available for stop-word elimination; Finally increase the efficiency of the feature extraction algorithm.

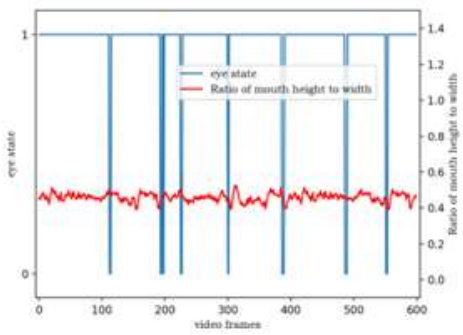
Stemming:

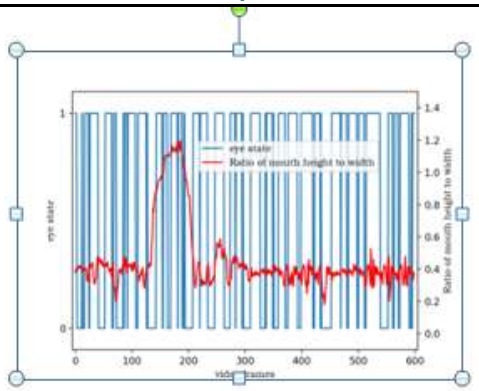
Stemming and lemmatization are two mandatory processes of pre-processing modules when extracting feature information. The stemming process converts all the bent words present in the text to the original form of the stem name. For example, ‘automatic’, ‘automatic’ and ‘automatic’ each ‘stem’ is automatically converted. ‘Steaming gives faster performance in applications where accuracy is not an issue.

EXPERIMENTAL RESULT



Our system provides the best accuracy when the cab is bright and the driver wears no glasses. If the driver wears glasses and the driving environment is slightly dim, the accuracy of fatigue driving is reduced. Regardless the processing speed is 18fps in bright and when environment is dark, the speed is 16fps





In this phase system extract various feature set using machine learning methods for sentiment classification. We extract four basic features from preprocessed data like unigram features, Bi-tagged features, dependency rule base features etc.

Features Selection:

The hybrid method is used for feature selection in full drawn features. Basically three types of features have been extracted from the given data. The purpose is to select the best feature that will increase the accuracy of the classification. Many irrelevant features appear when removing a feature, which must be removed when we select features. We have used TF-IDF, maximum correlation and correlation base hybrid method to select the features. The advantage of this method is the selection of relevant features for a set of individual features. The TF-IDF cosine similarity, TF-IDF co-event matrix and MRMR method are used for feature selection.

Proposed Algorithm:

As discussed above, the original KCF algorithm is unable to automatically obtain the tracking target of the first video frame. Besides the original KCF algorithm, in which the object goes out of the camera's sight, we align the MC-KCF algorithm in case the algorithm is unable to track the driver's face. In Section III, the MTCNN algorithm uses the bounding box to precisely determine the human face. Thus, we use MTCNN to periodically calibrate the MC-KCF algorithm.

After preprocessing the video frame, the cloud severs will judge whether the current image is the first frame. If it is, the cloud server will use the MTCNN algorithm to locate the human face in the image; otherwise, the cloud sever will continue to judge whether the span of tracking time surpasses 10*s*. If the answer is yes, the cloud sever will use the MTCNN algorithm to relocate the human face and reset the tracking time. If the system evaluates that the current image is notthe first frame and the duration of the tracking time is less than 10*s*, DriCare will use the MC-KCF algorithm to track the driver's face using the result to update the scope of the search for the driver's face for the next frame.

EXISTING SYSTEM

In existing machine there may be no computerizes machine to identified the present day driver slumbering expressions. So someday driver is making an attempt to sleep on duty so this is dangerous for the passengers on board bus. So we're trying to triumph over this trouble we are seize video streaming on-line of bus and discover the motive force expression and extract facial expression and decide the driver is napping or not

ADVANTAGES

Advantages:

1) Improve bus security and passengers.
2) Avoid accidents
3) Secure and efficient system .

CONCLUSION AND FUTURE WORK

We endorse a novel system for comparing the driver's degree of fatigue primarily based on face tracking and facial key point detection. We layout a brand new set of rules and advise the MC-KCF algorithm to tune the driver's face the usage of CNN and MTCNN to improve the unique KCF set of rules. We done the facial regions of detection based on facial key points. Moreover, we introduce a new evaluation method for drowsiness based totally on the states of the eyes and mouth. Therefore, DriCare is nearly a real-time machine as it has a high operation speed. From the experimental results, DriCare is relevant to unique circumstances and can offer stable performance. In destiny we will put in force drowsiness detection device in aircraft as a way to alert pilot. The alcoholic sensor is also used for drunk drivers. The alcoholic sensor is also used for inebriated drivers.

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